



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,865	09/15/2003	Noel Wayne Anderson	16010-US	2139

7590 04/28/2004

Darin E. Bartholomew
Patent Department
DEERE & COMPANY
One John Deere Place
Moline, IL 61265-8098

EXAMINER

ANDREA, BRIAN K

ART UNIT	PAPER NUMBER
3662	

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicant No.	Applicant(s)
	10/662,865	ANDERSON, NOEL WAYNE
Examiner	Art Unit	
Brian K Andrea	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 September 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 10-13 is/are allowed.
- 6) Claim(s) 1-7 is/are rejected.
- 7) Claim(s) 8 and 9 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 September 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date, _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/15/03</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,040,909 to Hasegawa et al. (hereinafter, "Hasegawa").

With regard to claim 1, Hasegawa teaches a device comprising: an optical source 1 for emitting beam of electromagnetic radiation; a first lens 2 for focusing the beam of electromagnetic radiation into a micro-mirror-incident pattern; a micro-mirror array 3 receiving the micro-mirror-incident pattern and outputting a controlled radiation pattern (see column 4, lines 31-32); a processor 31 for selecting the controlled radiation pattern based on at least one input; and a second lens 4 for focusing the controlled radiation pattern toward an object for estimation of a distance of the object from the optical device.

With regard to claim 2, Hasegawa teaches that the micro-mirror array comprises a microelectromechanical system (see column 4, lines 17-25).

With regard to claim 3, Hasegawa teaches that micro-mirror array comprises an array of deformable surfaces and a controller for controlling the array to direct the controlled radiation pattern (see column 4, lines 17-25).

With regard to claim 5, Hasegawa teaches that the controlled radiation pattern

Art Unit: 3662

has a beam size determined by reflective contributions from multiple mirrors of the micro-mirror array (see column 4, lines 17-25).

With regard to claim 7, Hasegawa teaches that the optical source 1 is a laser.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa.

Hasegawa does not specifically teach the use of the patterns required in claims 4 and 6. however, Hasegawa does teach that the creation of any pattern is possible using the DMD (see column 4, lines 17-25). Therefore, it would have been obvious to create and use any pattern desired, including the patterns required by the claims, with the DMD taught by Hasegawa.

Allowable Subject Matter

5. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 10-13 are allowed.

Art Unit: 3662

7. The following is an examiner's statement of reasons for allowance:

The claims are allowable because they require the measurement of distance using time-of-flight rangefinding in combination with the use of a micromirror array. U.S. Patent Nos. 6,438,272 to Huang et al. and 6,657,711 to Kitagawa et al. teach the use of a micromirror array for varying a projected pattern which is used to measure the distance to the object under measurement (using intensity and phase comparison). However, neither patent discloses the use of time-of-flight rangefinding as required by claims 8, 10, and 11. Furthermore, while Hasegawa does not teach the measurement of distance (the statement in claim 1 that the device is "for measuring a distance . . ." is in the preamble and therefore not given any weight), he does teach all of the limitations of the rejected claims.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,437,854 to Hahlweg teaches the use of an intensity filter on the receiving side of a rangefinder.

U.S. Patent No. 6,538,751 to Ono teaches the use of an intensity filter on the transmission side of a rangefinder.

U.S. Patent Nos. 4,687,326 to Corby, Jr. and 6,618,123 to Uomori et al. teach the varying of a projected pattern in a rangefinder.

U.S. Patent No. 6,525,863 to Riza teaches a micromirror array.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Andrea whose telephone number is (703) 605-4245. The examiner can normally be reached on M-F 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarca can be reached on (703) 306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BKA
BKA
23 April 2004


BERNARR E. GREGORY
PRIMARY EXAMINER
A.U.3662